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THE FAILURE OF BIOLOGIC SOCIOLOGY.

In his latest book* Mr. Ward illustrates at once the strength and weakness of the class of writers to which he belongs. Judged by the standards this class would accept, he is particularly strong. Viewed by an outsider, his arguments seem weak and inconclusive. His chains of reasoning break of their own weight when not buoyed up by the sympathies of the reader. A detailed criticism of the conclusions arrived at in such a work would be of little value unless undertaken by one in complete sympathy with the stand-point and method of the author. A criticism, however, aimed rather at general tendencies than at particular conclusions, and which will treat the book as representative of the class of literature to which it belongs, may be not without interest even though from the pen of one whose views are in many respects opposed to those held by Mr. Ward. The following review is designed to contrast what I may call the economic and the biologic concepts of social phenomena. It seems fair to regard Mr. Ward's book as a development of the biologic concept ; but I shall not feel bound to confine myself to his work in emphasizing the contrast which I have in mind.

In the development of the social sciences the paradoxical has played an important rôle. One might suppose that the scientific world would have marked out a particular field for the social sciences ; that work would have begun in all parts of this field simultaneously, and that these parts would have been kept well co-ordinated from the start. Perhaps this method would have been pursued if the science had originated a century later when the idea of the universal reign of law was generally accepted. As it was, however,

* " *The Psychic Factors of Civilization*," By LESTER F. WARD. Pp. 370. Boston: Ginn & Co., 1893.

only a small section of social science was at first investigated in a scientific spirit while other portions of social phenomena were gradually added to this existing science at later periods. With each addition the concept of this growing science changed until at length it practically covered the whole realm of social science. To this historic science has been given the name political economy, and the persons whose attitude toward social questions is determined by its study have been called economists. Every one admits that these names are defective, and many unsuccessful attempts have been made to coin other terms which would make the name of the science correspond more nearly to the phenomena investigated. About 1830, when the economists had already mastered a good portion of this field, a new and abstract classification of the sciences was devised by Comte, and the name "sociology" given to the science of social phenomena. The opposition to "economists" was at this time very marked, and those who were dissatisfied with the methods and results of economics rallied around this new name and endeavored to create a science whose scope would be broad enough to include all social phenomena, and whose results would harmonize more fully than did those of the economists with the historical and inductive spirit of the age. The new movement, however, was not productive of results. Thus we have come to have in political economy a science without a name, and in sociology a name without a science, both claiming to occupy the same general field. The economists refuse to recognize a name which is associated in their minds with wrong methods and untenable conclusions, while every opponent of the economists, stimulated by the word "sociology," seizes upon stray phenomena and from them derives far-reaching laws, imagines that he has discovered a new science, and proceeds to dispossess the "squatter" economists who have so long held the field without legal title.

The opposition between these two schools of social science is emphasized by different concepts of psychic phenomena.

Biologic sociologists extend the field of psychology so far into the province of physiology that the distinction between psychic and vital forces is lost. Mr. Ward, for example, contrasts psychology with cosmology,* the one being a study of the mind and the other of the universe. The mind is then defined in a broad way which makes it include the brain and nervous system, thus making physiology a part of psychology. Before the rise of biology, however, psychology was used in a much narrower sense, and sharply contrasted with physiology. Mental science in this classification includes all the phenomena of consciousness just as physical science includes all the visible phenomena of the material world. Psychology was regarded as a branch of mental science, treating of the "uniformities of succession," in the terminology of J. S. Mill, or, in more general terms, treating of the relations which subsist between those states of minds usually called ideas and their causes. "All states of mind," says Mill, "are immediately caused either by other states of mind or by states of body. When a state of mind is produced by a state of mind, I call the law concerned in the case, a law of mind. When a state of mind is produced directly by a state of body, the law is a law of body and belongs to physical science."† The causes of sensations and the forces which produce them thus lie in the province of physiology. The subject-matter of psychology is the relations existing between mental states. Psychic forces are the bonds which unite these mental states and cause them to succeed one another. Vital forces produce sensations, psychic forces determine the order and relation of ideas.

I do not care to justify this classification of mental phenomena. The important concepts will be recognized by every one even though other terms be used to designate them. Subjective phenomena (the realm of consciousness), the relations between ideas and those between sensations and

* "Psychic Factors of Civilization." p. 9.

† Mill's "Logic." Book VI., Chap. IV.

certain states of body, are generally recognized as three different groups of phenomena. Mr. Ward does not, however, keep these differences clearly in mind. He uses the term "psychology" to designate the field of inquiry relating to the connection between bodily states and sensations, and calls those forces "psychic" which unite sensations to bodily states.* This field, however, lies in the province of physiology and the forces in question are vital forces.

This peculiar use of terms affects Mr. Ward's reasoning in many ways. Starting from the premise that desire is a true natural force † he asserts that it is also a psychic force, and finally that it is a dynamic force, *i. e.*, the cause of social progress. Desire, however, is a natural force only in as far as it is the cause of bodily movements. In this sense it is a vital force, for all relations between states of mind and states of body are due to vital forces. His argument, however, demands that desire should be the binding force, not between states of body and states of mind, but between different states of mind. In this way alone can it be the cause of mental activity, and thus indirectly the cause of social progress. Mr. Ward, however, proves no such connection between desire and mental progress. He seems to imply that by extending the use of the term "psychic" so as to include what other thinkers have regarded as vital forces and by subsuming what they have regarded as "psychic" under the more general class, he can predicate of this more general class what these thinkers predicated of the class of phenomena which they called "psychic."

* "Psychic phenomena are the relations which subsist among the material molecules of the brain and nervous system and between these and the material objects of the outside world which appeal to them by means of actual mechanical contact." Ward's "Dynamic Sociology," vol. i., p. 408.

† "Desire is the essential basis of all action, and hence is the true *force* in the sentient world; and consistency as well as truth requires us to predicate this equally of man and of all things lower in the scale of animal life. The classification of the forces operating in the department of animated nature will then be equivalent to, and, in fact, the same thing as the classification of animal desires; and, as what is true of all must be true of a part, this will likewise constitute a classification of the social forces." "Psychic Factors of Civilization," p. 116.

This argument may be called the subjective argument, as it connects desire with social progress through mental development. There is, however, another argument more frequently used by Mr. Ward, which may be called the objective argument, because it connects desire with social progress through bodily activity. Desire, we are told, causes bodily activity.* Bodily activity creates social motion, and hence it is the cause of social progress. Desire and bodily activity, however, are equally prominent as phenomena of static as of a dynamic society. The desires (Mr. Ward's social forces) control the actions of individuals as fully in societies where there is no social progress as in societies which are truly dynamic. It cannot therefore be the desires alone which insure progress. It is rather the conditions determining the direction in which the desires act that promote progress. Or to put this argument in another way, the causes of social progress lie not in the subjective desires or in the bodily activity of the members of a society, but in the environment of the society. The utilization of the water of a river to drive a mill depends upon the peculiarities of the bed of the river. If the descent is uniform from its source to the mouth, the current cannot be utilized. If, however, the descent is at places rapid and elsewhere very slight, dams and mills are possible. The same considerations determine the progress of society. Human desires and individual activity can create social progress only when they operate under peculiar conditions. Both these forces may be wasted if the objective environment does not possess the conditions necessary to social

* "The social forces in the sense in which they have been here spoken of are those influences which impel man to action. They are qualities residing in men which determine and control their physical activities. They have their seat in the nervous system, and are what incline the body and limbs to move in any particular direction. We call them *desires*. They are the monitors which prompt us as to the demands of the system and propel us toward the object demanded. Now it is human activity which has exerted the great influence upon society that has resulted in making it what it is. It is action which has worked out human civilization." "Psychic Factors of Civilization," p. 81.

progress. The activity of individuals may result only in eddies which prevent any onward movement of society as a whole.

It is not my purpose to follow Mr. Ward's arguments seriatim. The strength of his position does not lie in his particular arguments, but in his general attitude toward social questions and in his method of reasoning. We have to do not with an individual, but with a type of thinkers who have acquired a definite concept of the world, and a particular way of reasoning through their studies in other scientific fields, and who are applying the results of these investigations in their social studies. Whether these concepts and methods will be fruitful in the social sciences depends upon the validity as general propositions of the doctrines and methods used in these earlier studies. If they are particular propositions, true only of the concrete conditions in which they become known, it is a source of error to use them as premises in new studies in other sciences.

Mr. Ward, like many other thinkers of the present time, is primarily a biologist. The great scientific victories of the nineteenth century lie in the field of biology, just as those of the eighteenth century lay in the field of physics and astronomy. We are closing this century with as definite a bias in favor of biologic reasoning and analogy as the last century closed with a similar bias in favor of the method of reasoning used in physics and astronomy. The problems of the twentieth century lie plainly in the field of sociology and psychology. Does the mental attitude which the victories of biology have given to the present generation of thinkers promote or retard the development of these new sciences toward which the next generation of thinkers must direct their attention? It is such questions as these that the reading of Mr. Ward's book suggests. The particular arguments are of minor importance if his general attitude toward social problems is correct.

I believe that the biologic bias creates erroneous notions of social phenomena, and stimulates activity along fruitless lines

of investigation. Moreover, I hold that the only entrance to sociology, and to psychology as well, lies through the economic studies which have already proved so fruitful of results in an adjacent field. The economic entrance to these sciences leads from the concrete to the abstract, while the biologic entrance leads from the abstract to the concrete. We are thus at the start face to face with the vital problem relating to the true method of investigation and discovery. In addition to this, the economic method starts from an inductive investigation of subjective phenomena. The mind furnishes directly many of the premises upon which the economist depends. They are his starting point and not his goal. By the biologist the mind is reached through biologic studies, and has its phenomena interpreted through its relation to biologic facts. The laws of mind are deductions from the laws of life, and the premises of social and of psychological studies are inferences from biologic facts and not inductions made through a direct investigation of mental phenomena. The biologic sociologist starts with a theory of mental life due entirely to studies in other sciences and having validity only on the supposition that social action is a mere complex of the forces active in the biologic and physical world.*

This line of thought is emphasized by Mr. Ward. It is assumed that protoplasm is not only the physical basis of life, but also the physical basis of mind. Mental processes are described in physiological or biological terms. It is regarded as unscientific to emphasize the *mystery* of the mind, since it is merely a property of the organized body. Nothing is explained, we are told, until it can be reduced to the movement of matter in some form. The psychic forces are ultimately reducible to a physical basis. They have their origin in the human body, and have a more or less definite local seat.

I have reproduced these ideas not with any thought of discussing them or their consequences but merely to get at

* See, for example, the note on page 66.

Mr. Ward's method of reasoning. Any hypothesis concerning the basis of mental and social life is legitimate if it really adds to our knowledge or helps us to see more clearly their relations and importance. The method of an author must be judged, however, by more general principles than those used to judge of any particular hypothesis. And this necessary part of good reasoning has been so generally neglected, except in political economy, that it is only with difficulty that the bearing of such discussions can be made evident to persons who assume that there is only one scientific method, and that the method of the physical science with which they are familiar. It is commonplace to distinguish between the deductive and inductive methods, and if the classification of method is carried no farther, this distinction has little value. The fact is, that there are many kinds of deductive and of inductive methods, and we must have more definite knowledge of a given method than these terms will impart before we can judge of its validity.

The first method of reasoning I wish to describe is used by writers like Mr. Ward who believe that the universe has at its basis some simple element and that all phenomena are due to the effects produced by this element in its various combinations. Whether this element be matter, force or energy is of no consequence at present, as we are interested not in questions of fact, but only in those of method. The simple forces these writers tell us are those dealt with in physics, the chemical forces are next in order of complexity, then come the vital forces of biology, next the psychic forces, and finally the social forces. There is from this point of view a hierarchy of the sciences, each of which deals with a particular class of forces. If this thought be accepted, the tendency is to assume a bold form of deductive reasoning and to make our knowledge of any science depend upon deductions made from the facts and forces of the underlying sciences. Chemistry thus becomes a form of physics, biology becomes a combination of physics and chemistry and has its

laws verified, not by inductions within the field of biology, but by deductions from physical or chemical premises. To a still greater degree psychology and sociology lose their independent character as fields of investigation and become the battle-ground for circuitous deductions based upon the facts of physics, chemistry and biology. Analogy and deduction take the place of true induction within the realm of psychology and sociology. This long-distance method of reasoning has a great charm for many minds and constitutes one of the erroneous features of the reasoning of biologic sociologists.

The second method of reasoning is popular in biology, although not peculiar to it. Scientific inquiry may begin with a knowledge of given causes, and from them reason to their effects by a process of deduction; or it may begin with a knowledge of the effects of which the causes are unknown, and then the inquiry is as to the laws which determine the visible, known effects. Biology is a science of the latter class. The organisms which the biologist studies are the result of an evolution due to the adjustment of these organisms to their environment. The biologist studies the record of the effects of this adjustment as shown in the development of animal life and infers what their causes are. Geology is a similar science. The crust of the earth is the record of the changes and effects which unknown and unseen forces have produced in distant ages. History is also a science of this class. The written records of past civilization are studied in the hope of discovering the causes which produced the recorded events. Comte believed that this was the only true method of inquiry and bases his theory of a positive science upon it.

The third method of reasoning which I wish to emphasize is that used by economists, although it is not characteristic of them alone. It represents merely a certain stage in the process of the development of any science when it is passing from a purely inductive phase of inquiry to a purely deductive

phase. The essential features of this method are that first inductions are made, based upon a direct observation of the phenomena in question, and then these inductions are used as premises from which deductions are made as to other facts. Both the inductions and deductions lie within the realm of the science and the inductions precede and determine the deductions. There are no long-distance deductions from underlying sciences which shut out or do away with direct observation and induction. Economics thus differs radically from physics, which deals largely with long-range deductions from unseen causes and from biology which has merely a record of effects from which to infer causes. The causes in economics are apparent and may be discovered by direct investigation. The reasoning is thus from cause to effect, and not from effect to the cause. It is therefore a true deductive science, free from those suspicious long-range deductions from the realm of other sciences which at present are so characteristic of physical speculations.

The errors in Mr. Ward's reasoning are due to a combination of the first two methods, and to a neglect of those precautions which a thorough knowledge of the third method of reasoning would insure. If he were as familiar with the results of economic investigation as he is with those of biology and physics, he would be a safer guide. His arguments on social affairs begin with certain long-range deductions from the physical sciences which in the so-called hierarchy of the sciences precede social science.* If these deductions were verified by inductions within the realm of the social sciences, the procedure would be legitimate. At this point, however, Mr. Ward swings over from the first to the second method of reasoning. He now becomes a biologist, and uses the

* "The power of co-ordinating facts can only be acquired by their study in relation to more general truths. These general truths are to be found, not in the science to which the facts belong, but in the more general sciences to which this is subordinate. In a word, the details of each science can only be generalized by referring them to the laws of the science next above it in the hierarchy." Ward's "Dynamic Sociology," vol. i., p. 135.

biologic method of inferring the causes from the effects. Social and psychic phenomena influence bodily actions and determine in many ways the course of biologic development. Mind and society, we are told, are not objective facts which can be studied directly, but their activities must be inferred from the results. We can know them only through the mechanical effects they produce. A series of long deductions from other sciences makes the basis for the social sciences, and then the verification of the principles which are given to the social sciences by these deductions is secured through the effects which they are supposed to have in the biologic world.

We thus have, to speak generally, three points, A, B and C, which represent three fields of investigation. B is said to depend on A, an underlying science, and gets its principles from deductions about the phenomena of A. As C is produced largely as the result of B, we can verify the assumed deductive principles of science B by their effects in the field of science C. We can on this hypothesis proceed without any direct knowledge of science B. All we need to know of it can be learned through sciences A and C. Thus, by shifting from long-range deductions to inferences from effects we can create a science without any direct knowledge of its content. Surely the hierarchy of the sciences is a useful institution if it can help us over difficulties in so easy a fashion.

It is hardly necessary to state that no science has ever been developed on this plan. Valuable inductions have been made within the realm of each science before the deductive epoch began. Kepler's laws, and a mass of work even more inductive in character, preceded the discoveries of Newton, by which physics was changed into a deductive science. Chemistry did not succeed until attempts to deduce chemical laws from the principles of physics were abandoned, and a series of inductions based on direct observation of chemical changes was substituted in their stead. In biology also the theory of evolution was proved by an inductive study of biologic facts.

The recent long-range deductions based on physical facts is a subsequent growth.

Yet at every stage in the progress of the physical sciences the method which Mr. Ward uses has been tried and has proved a failure. The cause of these errors may be ascribed to two pre-suppositions to which the scientific mind is peculiarly liable.

In the first place a long continued study of the phenomena of any science cramps, if it does not destroy, the imagination of the student and thus creates the habit of viewing the phenomena of other sciences as though they were mere varieties of those facts with which the scientist is most familiar. Doubtless the concept of a common simple element underlying all phenomena is useful, but when it assumes the concrete form which the study of particular classes of facts gives it, it becomes a dangerous error.

This restraining influence of a defective imagination shows itself most plainly when the scientist becomes a student of mental phenomena. Mr. Ward, for example, is very clear in his explanations so long as he deals with the nervous or vital processes. He describes in a skillful way the cell structure, and traces the nervous currents from their origin to their final culmination in bodily activity. But when he leaves the physical side and tries to describe mental processes, his descriptions become vague, and he is unable to break away from the concepts which were useful in his biologic studies. He compares the phenomena of life and those of mind to the obverse and reverse sides of a coin. If the vital side of mind may be called the obverse side, Mr. Ward's description of it is excellent, but the reverse or purely mental side is simply a copy of the vital side minus the visible characteristics which mental phenomena lack. He cannot imagine the mental forces to assume any other form than the vital currents and reactions take on. His mental phenomena are merely *ghosts* of the biologic world. They act and react, march and countermarch, with all the

precision of strictly biologic creatures. Mr. Ward traces on the obverse side of his coin the real changes which biologic forces create, and then turning his coin over, he imagines a series of biologic ghosts rehearsing the drama of the obverse side. Looking on the obverse side, he sees the grooves made by the tendency of the vital forces to follow the line of least resistance, and then on the reverse side he imagines that he sees the mental ruts made by a like tendency of ideas to trail after one another.

Such psychology is merely *ghost* biology, and has not the semblance of a true science about it. There are no true inductions based on psychic phenomena. To return to the earlier illustration of method, it makes psychology like science B, which has its principles determined by long-range deductions from science A, and then the deductions are verified by the assumed effects which the forces of science B have on the phenomena of science C.

The second presupposition of the scientific mind to which I refer is due to the opposition existing between the scientific and theological methods of reasoning. The scientist assumes that all phenomena have a natural explanation, and that there are no breaks, missing links or "mysteries," which must be referred to the theologian or metaphysician for an explanation. To avoid the possibility of such gaps, there is a strong inclination to go beyond the existing body of exact knowledge, and to create sciences and to supply hypotheses by which such gaps can be avoided. The whole world of phenomena must be explained naturally at any cost, and thus a series of ghost sciences is created to supply the defects in the real sciences.

Locke, in his "Elements of Natural Philosophy," closes one of his chapters as follows : "All stones, metals and minerals are real vegetables, that is, grow organically from proper seeds, as well as plants." In this statement we have the essence of a ghost science, and if Locke had the disposition and versatility of Mr. Spencer, this thought might have

been expanded into a volume. This kind of geology would have proved just as serviceable in disproving the claims of the theologians that geologic facts have no natural explanation as Spencer's analogies about organisms which serve the like purpose in sociology at the present time. Locke was not willing to await the rise of a true science of geology, but, like Spencer, he resorts to biologic analogies to fill in the gaps.

These two presuppositions of the scientific mind, a cramped imagination and a disposition to discover at any cost a "natural" explanation for all phenomena, have been the source of many serious errors. Remember how many centuries the true explanation of the motions of the planets were delayed by the bias of scientists who affirmed that the planets must move in circles because these are the only perfect, geometrical figures. The opposition of the followers of Newton to the new theory of light came from this source. They could not conceive how light could be carried through space except by the movement of particles from body to body governed by the elementary laws of motion. Their theory of light was merely a ghost physics and with its aid they delayed for a century the acceptance of the true theory. Chemistry and biology in their early years had also to contend with ghost sciences created by the presuppositions of the scientists who first attempted to occupy these fields. When Comte created his hierarchy of the sciences, he put phrenology in the place of psychology. He must have a natural explanation of mental phenomena, and as biologic studies had not yet assumed a definite form he created out of phrenology a science in which he could secure the needed physical basis for the mind. It was of course merely a ghost science, but it enabled him to assume a scientific air and to forestall any charge of incompleteness which might be raised against his system.

Comte has called attention to three states of mind which characterize three distinct stages of human progress, the

theological, the metaphysical and the positive. During the first two stages, the theological and metaphysical bias of men caused them to waste their time and energy in endeavors to connect the phenomena of the world with unseen causes and entities. A more complete statement of human progress would divide it into four stages, putting the bias of scientific minds on a par with that of the theological or metaphysical minds. The desire to explain all phenomena through some simple element; the attempt to combine all the sciences into a hierarchy in which the principles of each special science would be derived deductively from the underlying sciences and not inductively within its own field ; the determination to have a natural explanation at any cost even when recourse must be had to shallow analogies; the inability to break away from the concrete modes of thought fitted for one science when the phenomena of another science are the subject of investigation ; all these in their united effect have delayed the progress of thought even more effectively than have the corresponding errors of theologians and metaphysicians. These feelings have caused a series of ghost sciences to appear, which have deceived their originators and diverted the attention of investigators from fertile fields where progress is possible. A new era for positive science cannot be inaugurated until the bias of the scientific mind is as fully recognized and as carefully guarded against as are the other forms of intellectual bias which are now so completely discredited.

Aside from the causes already mentioned for the failure of biologic sociology there is another even more important. This is the inadequate conception possessed by biologists of what really constitutes the environment of an organism or of a society. This may appear a surprising statement, as no formula is more common in the writings of this school than that of the adjustment of the organism to its environment. But if a close examination is given to what is included under discussions of this relation between the organism

and the environment, it will be found that the organism occupies the attention and that the problems of the environment are neglected.* While assuming to handle not merely the problem of life, but also that of the conditions of existence, the latter is treated not by direct study, but by inferences drawn from a study of effects of the conditions of existence on the development of organic life. Changes in organisms, we are told, are due to changes in the environment. It is assumed that changes in the environment have preceded every change in organic life, but we are left in the dark as to what these changes in the environment were that have modified organic life. Spencer's writings, for example, are meagre and crude in their allusions to the environment, and in one place † he says that the environment may be left out of consideration altogether.

The biologic method, as I have shown, is a study of a record of effects from which the causes are to be inferred. The organism is an effect of the contact between it and its environment. Biologists have studied these effects to get at the laws of life but have neglected the environment in which lie the causes of the effects they study. A direct investigation of the environment would reveal the principles which produce changes in organisms and thus create a progressive evolution. It is possible to obtain deductively in this way what otherwise can be acquired only through inferences from effects. The study of effects in search of causes is much more liable to error than is a study of causes to determine effects.

An unfortunate result of this procedure is an erroneous concept of the hierarchy of the sciences. Biology is put

* "Throughout Biology proper, the environment and its correlated phenomena are either but tacitly recognized, or, if overtly and definitely recognized, are so but occasionally; while the organism and its correlated phenomena practically monopolize the attention." Spencer's "Psychology," vol. i., p. 134.

† "In brief, then the propositions of Biology, when they imply the environment at all, imply almost exclusively its few general and constant phenomena, which, because of their generality and constancy, may be left out of consideration." *Ibid.*, p. 135.

immediately after chemistry, and is followed directly by psychology and sociology. A progressive evolution is thus taken for granted, but the conditions which determine it are entirely neglected. If the conditions of social progress are sought it is wrongly assumed that they result from the laws of life and not from the peculiarities of the environment.

Another error has crept into the current concepts of the environment of society because the attention of biologists is directed primarily to the study of the lower forms of life. These organisms receive their nutriment directly from their environment. Their organs of assimilation come in contact with the environment, and thus the food supply becomes a part of the environment of the individual. The process of organic development encloses the organs of assimilation within the body, and the process of social development makes the act of food getting indirect. Society, through its economic organization, gets the food and other material directly from the environment, and then, within the society, the distribution of these products among its individual members takes place. The environment thus is mainly social, and touches the individual at but few points. Through the development of individual organisms, or of social relations, many processes cease to be problems of an adjustment to the environment. These processes take place within society, or even within the individual organisms. They are thus removed from the environment, and are free from its direct influence.

The environment of a single isolated creature is moreover very complex and extraordinary, because it is affected by so many local conditions. It is made up partly of the physical peculiarities of the region which it inhabits, and partly of the influence of the organisms with which it comes in contact. It may live on some form of organic life, and be in turn the prey of other forms. If you force a multitude of different organisms into a limited area, the environment of each

becomes so complex that it is no wonder that biologists are chary of undertaking to describe this environment except in terms of its effects.

Social evolution, however, changes all this and reduces the many complex conditions of a primitive state to a few simple ones. Society, through its increasing powers, gradually destroys the organisms which are antagonistic to it. The savage animals are killed, hostile tribes are exterminated, and all plants or animals which would compete with man for the possession of the region which he inhabits are destroyed or driven out. The environment of society thus becomes simply the crust of the earth in so far as this crust is useful to society. It is strictly an economic problem to decide what the environment of advanced society is, and from these economic conditions can be determined what the influence of the environment on such a society will be. The peculiarities of this crust determine the three economic conditions to progress—climate, food and material. Change the form of the crust, and the climate becomes favorable or unfavorable. Alter the surface a little, and there would be no coal, iron or similar useful material within reach. Had certain poisonous substances been deposited on the surface, as is the case in some parts of the world, no vegetation would be possible.

All forms of organic life secure the conditions for a progressive evolution from the peculiarities of the crust of the earth which form their environment. Were the crust of the earth a level plain in which there were no irregularities, the forces creating a progressive evolution would be weakened if not destroyed. Low forms of animal life might be dominant, and progress would be retarded, as it has been in the case of deep-sea life. It is to the presence of mountains and to the changes which the formation of mountains provoke that the rapid evolution of animal life has been due. They bring many forms of animal life into close contact with one another, and hasten the struggle by which progress is

secured.* It is fair to assume that the relative rate of advancement in the forms of life on the different continents has depended upon the processes of mountain building or upon the conditions growing out of the existence of mountain ranges. Europe is far ahead of any other region in the development of its organic life, while Australia lags behind all the other continents in this respect. Had Australia been endowed with the same irregularities in its crust as Europe, the evolution of its organic life would have been equally rapid, because of the increased intensity of the struggle for existence which such conditions would have afforded.

The conditions determining the climate, food and materials of a society form its objective environment in contrast with the social instincts, customs, ideals and institutions which form its subjective environment.† These two environments supplement one another, and together determine the possibilities of social progress. In the earlier stages of evolution, regions with the most complete objective environment have the conditions favorable to progress. In these regions many varieties of climate, food and material are aggregated in close proximity, thus giving a local environment where progress is possible before the subjective environment is strong. In regions, however, where a variety of climate, food and material can be secured only from a large area of land (a great continent for example), the objective environment touches the individual at too few points to insure a progressive evolution. A strong subjective environment must supplement the weaker objective environment of these

* "In a continent such as Europe, where a great diversity in the mountain systems favors the localization of life and the development of peculiar forms, the tendency is to develop in separate mountain strongholds particular species, and to evolve their militant peculiarities until the forms are fitted to enter into a larger contention with their kindred species in less localized assemblages of life. Thus each mountain district becomes, as it were, a cradle of peculiar forms, which in time, when they have been proven by contention on their own ground, may enter into a wider field of combat." Shaler, "Nature and Man in America," p. 27.

† For a more detailed account of the nature of the subjective environment, see the writer's article on "The Place of University Extension"—*University Extension*, February, 1894.

regions before social progress in them can be continuous. Evolution begins in a local environment with favorable objective conditions, but it can reach its highest form only in the most general environment which the crust of the earth can afford. Here the objective conditions for social progress are the weakest, and the adjustment of society to this extended, but less pronounced, environment is due for the most part to the strength of the subjective environment.

If we define economic development as the progressive utilization of the earth's crust by the beings which inhabit it, this development is divided into two distinct stages—the biologic and the social. In the biologic stage the tendency is to localize the organism in places where the objective environment is most complete. There is a more complete adjustment to local conditions, and an increased dependence on the peculiarities of the objective environment for the conditions of progress. The environment becomes complex through the presence of many other antagonistic organisms, and the added intensity of the struggle for existence forces an increased adjustment to local conditions as a means of surviving. The complex environment needed for a purely biologic progress is afforded by mountainous regions, because here the local conditions are most diversified. In the course of this development there is an increase of function on the one hand and of desire on the other. The increase of function is demanded as a means of surviving in the isolated life which a local environment produces. An increase of desire leads to greater activity, and heightens the struggle for the local area to which the species is confined. It also leads to important limitations of the food supply and other sources of pleasure. Intense pleasures once enjoyed create habits which limit the species to a particular form of consumption, and thus increase still more the dependence of the species upon its local environment.

In the social stage of economic progress, however, the tendencies we have observed in the biologic stage are re-

versed. The group of organisms forming the society moves away from the conditions of the local environment and adjusts itself more fully to the conditions of the general environment. The society reaches out and procures its food and material from a continually larger section of the earth's surface. Gradually as the social forces gain in strength, the points of contact between the society and distant parts of the earth's crust increase, and new foods and material displace or supplement those of the local environment. Thus the different societies are bound together by economic ties into one society. In this process there is perhaps a loss of function and of the intensity of individual desires, but the harmonious blending of the many products secured from the general environment creates for the individual a better consumption than any local environment could afford.

The contrast between the adjustment to the local environment and the adjustment to the general environment demands emphasis because in it can be seen the two forces which create economic progress and the way in which they stand opposed to each other. Desire is the force back of the biologic development pushing the organism into an intense local environment. The satisfaction of intense quantitative desires is the goal of an isolated individual development. This is the realm of positive utilities, and the calculations of an individual under these conditions would be purely utilitarian.* There would be no check to utilitarian calculations because intenser feelings and functional growth would accompany every tendency to a greater localization and to a more exclusive utilization of the local surroundings. Under these conditions intense satisfactions come through comforts and luxuries that are rare and local, and the highest degree of functional growth depends upon an equally rare combination of circumstances. Men oppose the process of

* For a more complete discussion of positive utilities and of utilitarian calculations see the writer's article on "The Scope of Political Economy."—*Yale Review*, Nov., 1893.

socialization because they want intenser pleasures, stronger bodies, better stomachs, or more muscle and nervous force than the common conditions of a higher civilization afford.

The adjustment to the general environment is secured through another force. It is impulse and conviction that leads the members of a society to act together and thus increase the utilization of the general environment. Without impulses to move the members of a society in some one direction they would lack that common interest and combined action which extend the field of economic activity. Social impulses blind individuals to the advantages of the local environment and create instincts, customs and institutions which hem in the activity of individuals and compel them to exert themselves in ways most advantageous to society. These habits, institutions and race ideals form the subjective environment of individuals, and are created through the social impulses. A society cannot be progressive and increase its utilization of the general environment unless each of its members creates and projects the same subjective environment and gives to his instincts, habits and ideals the same reality that he gives to the phenomena of the objective world with which he comes in contact. The objective and subjective environments blend into one inseparable unit having the same degree of reality. The individual accepts social laws and institutions with as little question as he does the law of gravitation, and adjusts his conduct to the one set of conditions as readily as to the other.

It is necessary, therefore, to examine more fully into the forces that create the subjective environment, through which the social action of men is determined. In them we shall find the true intellectual forces and thus have a key to intellectual activity. Not merely the customs and ideals of social life are created by the social impulses, but also those deeper convictions which we call intuitions, including even the moral and logical instincts. Conviction, in whatever form we find it, has but one cause, the social impulses, and if we isolate it

from the complex conditions in which it usually appears, its source becomes clear.

The need of adjustment to the general environment of society gives occasion for the rise of the impulses which create the subjective environment of individuals.* Each individual projects the same environment and gives it an air of reality. Through these social convictions, created by impulses, society is bound together, and the common motives are germinated which force individuals out of the local environment and into a closer adjustment to the conditions of the general environment. Social conviction—the tendency to create and to accept standards for common action—is thus the first form of intellectual activity. Individual conviction—the tendency to use formal logic to convince one's self—comes later and gets its force from the earlier social form from which it is derived. The orator and judge who stimulate and enforce social standards precede in time the logician who creates an individual standard and gives it a higher validity than its social predecessor.

The impulse which leads to conviction in a social atmosphere is much stronger than we are apt to suppose. The real difficulty is to prevent conviction in improper cases. In society we are credulous creatures and make additions to our subjective environment on small provocation. The process of conviction, too, is not through logic, but through imparted impulse. The belief in one idea is imparted to other ideas as soon as these ideas are put into given relations to one another. There is a chemistry of conviction as well as of atomic combination, and it must also be studied inductively from results and not deductively from a composition of causes. Put a group of ideas, one of which is believed, into given relations, and the whole group will be believed. An impulse to believe is transmitted from one idea to others just as a

* To avoid confusion it should be remembered the subjective and objective environments form the environment of individuals, while the local and general environments form the environment of society.

body charged with electricity transmits its energy to other bodies if they are placed in a proper relation to it. To speak of the magnetism of an orator is not mere analogy. By this expression we indicate how an impulse to believe is imparted in a social atmosphere. The conviction of the speaker creates conviction in his hearers just as the loadstone infuses its own energy into the objects it touches.

It is because of the strength of the social impulses that they are overlooked and neglected. The subjective environment grows so easily that the process of weeding it out occupies the attention to the exclusion of the causes which create it. We call its ideas fancies and errors, and to exterminate them we distort our concepts of mental life until it seems as if scepticism were the only true intellectual activity. Formal logic was the form of scepticism to be first developed. By its use the individual compares the different parts of his subjective environment and adopts an objective standard to test their relative validity. A host of conflicting ideas, axioms and intuitions created at different stages in the process of adjustment to the general environment of society fall victims to this method.

Later, the individualist, or better named the social nihilist, attacks the customs, habits and institutions of society with the same method, and, at least to his own satisfaction, destroys them utterly. The whole subjective environment now seems wiped out and proved to be a myth and a snare. Next, the idealist undermines the objective environment with the same methods and shows that the external world is after all only a subjective train of thoughts. Finally, the thorough-going sceptic like Hume assumes that causal relations are similar in their nature to the habits and customs of the social world, and have no other validity than have these fictions of society.

The history of philosophy consists so exclusively of these various forms of scepticism that it seems to be the only kind of intellectual activity. The simple intellectual forces are

lost sight of in the effort to correct the bad results of their undue activity. No wonder when the intellectual activities are confined to so barren and negative a field that a school of positivists has arisen which excludes all theology and metaphysics from the realm of science. But the very fact of scepticism proves that there are intellectual forces creating conviction and forming a subjective environment of instincts, ideas, axioms and intuitions. A weeding process presupposes a force that makes weeds grow. It is the existence of a subjective environment and not the truth of its inferences that demands attention. Theology, metaphysics and social institutions could not have arisen if there were not some force in the intellect creating the fancies and delusions out of which they spring. A theory of conviction must precede a theory of knowledge.

The intellect assumed its present form because of the opposition of the tendencies of the local and general environments. Social impulses would have remained mere adumbrations but for the utility they possessed to society in forming the subjective environment of individuals through which an adjustment to the general environment of society was promoted. The strength of these impulses caused an overgrowth of the subjective environment and a subordination of individuals to the ends of society. The utilities of individuals and their functional growth were diminished by a disregard of local conditions. Scepticism weeded out the entangled network of the subjective environment and restored an equilibrium between the forces of the local and general environment of society. Then a conscious utilitarianism grew up as a result of scepticism and created motives for action where the subjective environment of individuals had been rooted out by scepticism. Our present intellectual activities assume one of these three forms, but no matter how much emphasis we may give to the second and third forms we must not forget that the first form is the original one and that in it lie the forces which make the other two effective.

The error of Mr. Ward in regarding the desires as the true psychic forces is traceable to his acceptance of that negative view of intellectual activity which scepticism offers. If the intellect is merely a machine for testing knowledge, then the psychic forces and the causes of social progress must be sought in those *quasi* vital forces called the desires. The desires are an element of progress only so long as further growth of function in the individual is desirable. They force an adjustment to the local environment through which feeling, activity and function are developed. The desires become anti-social forces, however, as soon as the impulses to social action begin to adjust society to the conditions of the general environment. When scepticism commences the desires are the motives which give vitality to utilitarian calculations, and thus these motives regain control in a large class of actions. In this form they are the basis of individualism and still continue to promote an adjustment to the local instead of the general environment. However useful individualistic and utilitarian action may be, it can hardly be claimed that they are social.

There are three elements in the theory of social progress. In the first place the crust of the earth to which society must adjust itself must be so constituted that an ever-increasing advantage is secured by enlarging the environment of society and thus securing more points of contact with the surface of the earth. Without these conditions social progress would be undesirable. It would be better to strengthen the individual in functional activity and desire through greater local adjustments. In the second place the social impulses must create a subjective environment for each individual that will lessen his desire for the utilities of the local environment and create the conviction that the group of activities, conformable to the general environment, are absolutely essential to his well-being. The conditions and forces of social progress are thus brought into harmony. The final element comes from the field of desires and utilities. It is not simple desire,

however strong, that aids social progress, but *marginal* desire. It is the condition of having more desires than the activities of a man can satisfy in his present economic condition. The strongest desires are ineffectual motives to progress if they can be completely satisfied. A margin of unsatisfied desires creates a dissatisfaction with the present environment and a determination to improve it. Keenly felt wants that cannot be satisfied, or in economic language, a high margin of consumption quickens the activity of the social impulses through which adjustment is secured to the conditions of the general environment.

I cannot close without reverting again to the hierarchy of the sciences, because a defective concept of it seems to me to be the main source of the errors of biologic sociologists. They assume that biology follows in direct succession after chemistry. The adjustment they recognize is between the chemical constituents of food and the plant or animal supplied. This view might be the true one if food were made chemically in nature's laboratory. We can imagine such a condition by assuming that the world had remained in a nebular state, and that organisms floated around in its gases as birds fly in our air. The food could then be secured by direct contact with the air, just as oxygen is now obtained by breathing. Life could doubtless continue in such a world, but a progressive evolution would not take place because the conditions for it would be lacking. Biology would be a dreary science without that variety of organisms, and the record of their development which now constitutes its charm.

With us, however, the food supply is not a problem of chemistry, but of the construction and composition of the earth's crust. Static relations have arisen between the elements forming this crust, and the forces thus imprisoned must be set free. Even the forces still free, like the heat and light of the sun, must be transformed into those semi-static relations we call climate before they can be of use. It is this static condition of chemical forces in the earth's crust

that creates the economic problems. The static compounds on the surface, which we call materials, must be transformed by a natural or artificial process into another series of static compounds called goods. Chemistry has to do with the composition of compounds. Economics deals with the transformation of these compounds into new aggregates useful to man. But for the peculiarities of the earth's crust this recombination of mere aggregates into goods could not take place. New qualities of matter are displayed by this process which would have been overlooked by a mere chemist. The economist has, therefore, to study peculiar forces as well as the obstacles to the action of the primary forces of physics and chemistry which the crust of the earth impose. Economics is thus partly a science of forces and partly a science of the obstacles which other forces meet when in contact with the earth's crust.

There is, however, still another series of transformations within the field of economics. Goods must become utilities. The forces they contain must in the end lose their static relations and through assimilation the goods become utilities to their consumer. The theory of utilities, or in more concrete form, the theory of consumption, thus becomes the subjective side of economics, corresponding to the theory of the composition of goods which forms its objective side.

A correct theory of progressive evolution should have as its basis a theory of goods and a theory of utilities. Its necessary assumption is that the quantity of goods and the quantity of utilities can be increased by a better adjustment to the conditions of nature. Adjustment has no meaning unless these two possibilities can be realized. The development of organisms is one means of adjustment; the development of social relations is the other. Both of these sciences rest upon economics as an underlying science, and are particular means of increasing utilities and goods. The end of the organic mechanism which the biologist studies is not different from the mechanical contrivances which men

construct with materials, or from the adjustments between men in society which the social impulses create. They would all remain mere adumbrations but for the peculiarities of the earth's crust which allow an increase of goods and utilities to result from each new adjustment between men and nature.

We pass from economics to sociology when the limit to the conscious calculation of utilities is reached. New influences now appear which cannot be determined deductively from the theory of utilities. The impulses of the subjective environment displace calculation and create a new class of phenomena which must be studied inductively. The theory of conviction is not a corollary to the theory of utilities, but is the result of new forces which lie dormant until the need of adjustment to the general environment demands common action on the part of men. Through the impulses leading to conviction, institutions and ideals become so real and objective to individuals, that their conduct is shaped by these elements of the subjective environment as unconsciously and as instinctively as if they were facts of the objective world. Axioms and intuitions and revelations displace quantitative feelings as premises for reasoning, thus giving to each individual the same motives for action and demanding from him the same conduct. When this new force creating conviction is tempered by the influence of scepticism and utilitarianism, we have before us the complex phenomena of society in all their richness and variety. Sociology thus rests on economics as an underlying science, but has its own forces and material to investigate, and its own problems to solve. Sociologists must reach down into the underlying sciences of biology and economics for much of their material, but they cannot admit that the forces creating these sciences are the true social forces without undermining the independence of their own investigations, and making their results mere aggregates of unsorted particulars.

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